CLAIMS

1. A method to improve the fatigue resistance of a threaded tubular connection subjected to stress variations, said connection comprising a male tubular element (1) including a tapered male threading (3), and a female tubular element (2) including a tapered female threading (4) which cooperates with the male threading (3) by makeup to produce a rigid mutual connection of said tubular elements with radial interference between radial load transfer zones (15) of said threadings, characterized in that the threadings each have a load flank (10, 5) extending substantially perpendicularly to the axis of the threadings, and in that said radial load transfer zones (15) are at a radial distance from the envelopes (E) of the thread roots of the male and female threadings and form an angle of less than 40° with the axis of the threadings.
2. A method according to claim 1, in which said radial load transfer zones are constituted by i) the crest of at least one helical protuberance formed on the thread root of at least one threading with respect to the envelope of the thread root and ii) the facing zone located on the thread crest of the corresponding threading.
3. A method according to claim 2, in which the protuberance or protuberances is/are disposed on the male thread root.
4. A method according to claim 2 or claim 3, in which the crest of the protuberances is convexly domed.
5. A method according to one of claims 2 to 4, in which the protuberances are connected to the thread root via one or more concave rounded portions.
6. A method according to one of claims 2 to 5, in which said protuberances are each constituted by a crest (15) of a helical rib (14) formed on the thread root (13) of the threading (3) under consideration.
7. A method according to claim 6, in which said radial load transfer zones comprise the crests (15) of at

least two helical ribs (14) which are in axial succession along the thread root (13) of the male threading (3).

8. A method according to one of claims 2 to 7, in which said facing zones located on the thread crest of the corresponding threading each have a recessed helix partially enveloping each protuberance.

9. A method according to one of claims 2 to 8, in which the height of said protuberances with respect to the thread root is in the range from about 0.2 to about 0.4 mm.

10. A method according to claim 1, in which said radial load transfer zones comprise the crest of a boss extending from the foot of the load flank to the foot of the stabbing flank on the thread root of the threading under consideration.

11. A method according to claim 1, in which said radial load transfer zones comprise the crest of a boss bearing on one of the flanks of the threading under consideration.

12. A method according to claim 1, in which said radial load transfer zones are constituted by respective intermediate regions (22, 26) of the stabbing flanks of the male and female threadings (3a, 3b), said intermediate regions forming a smaller angle with the axis of the threadings than the neighbouring regions (20, 21, 24, 25) of said flanks.

13. A method according to claim 12, in which the angle between said intermediate regions and the axis of the threadings is substantially zero.

14. A method according to claim 1, in which said radial load transfer zones are ramps (31, 36) constituting the stabbing flanks of the male and female threadings (3b, 4b) over the major portion of the radial height thereof.

15. A method according to claim 14, in which the angle between said ramps and the axis of the threadings is in the range 20° to 40°.

16. A method according to claim 14, in which the angle between said ramps and the axis of the threadings is about 27°.
17. A method according to one of claims 14 to 16, in which the profile of the male threading comprises a first concave rounded portion (32) defining the thread root and tangential to said ramp.
18. A method according to claim 17, in which the profile of the male threading comprises a second concave rounded portion (33) with a smaller radius of curvature than the first (32) rounded portion and tangential thereto and to the load flank.
19. A method according to one of claims 14 to 18, in which a groove defining the female thread root extends axially from a first wall constituted by the load flank (5) to a second wall (37) which is connected to the ramp (36) of the female threading.
20. A method according to claim 19, in which the profile of said groove comprises a central concave rounded portion (39) framed by first and second rounded concave portions (40, 38) respectively tangential to said first and second walls (5, 37) and with a smaller radius of curvature than the central rounded portion.
21. A method according to claim 19 or claim 20, in which the profile of the female threading comprises a convex rounded portion (37) tangential to a second rounded portion (38) and to said ramp (36), the zone of inflexion between the convex rounded portion and the second rounded portion constituting the second wall.
22. A method according to one of the preceding claims, in which said radial load transfer zones (15) are provided in a zone of full height threads or of threads termed perfect threads.
23. A method according to claim 22, in which said radial load transfer zones (15) are also provided in a zone of imperfect threads, in particular in a zone of run-out threads.

24. A threaded tubular connection for implementing the method according to one of claims 2 to 9 comprising a male tubular element (1) including a tapered male threading (3), and a female tubular element (2) including a tapered female threading (4) which cooperates with the male threading (3) by makeup to produce a rigid mutual connection of said tubular elements with radial interference between radial load transfer zones (15) of said threadings, in which said radial load transfer zones are constituted by i) the crest of at least a helical protuberance formed on the thread root of at least a threading with respect to the envelope of the thread root and ii) the facing zone of the thread crest of the corresponding threading.

25. A threaded tubular connection for implementing the method according to claim 10, comprising a male tubular element (1) including a tapered male threading (3), and a female tubular element (2) including a tapered female threading (4) which cooperates with the male threading (3) by makeup to produce a rigid mutual connection of said tubular elements with radial interference between radial load transfer zones (15) of said threadings, in which said radial load transfer zones comprise the crest of a boss extending from the foot of the load flank to the foot of the stabbing flank on the thread root of the threading under consideration.

26. A threaded tubular connection for implementing the method according to claim 11, comprising a male tubular element (1) including a tapered male threading (3), and a female tubular element (2) including a tapered female threading (4) which cooperates with the male threading (3) by makeup to produce a rigid mutual connection of said tubular elements with radial interference between radial load transfer zones (15) of said threadings, in which said radial load transfer zones comprise the crest of a boss bearing

on one of the flanks of the threading under consideration.

27. A threaded tubular connection for implementing the method according to claim 12 or claim 13, comprising a male tubular element (1) including a tapered male threading (3), and a female tubular element (2) including a tapered female threading (4) which cooperates with the male threading (3) by makeup to produce a rigid mutual connection of said tubular elements with radial interference between radial load transfer zones (15) of said threadings, in which said radial load transfer zones are constituted by respective intermediate regions (22, 26) of the stabbing flanks of the male and female threadings (3a, 3b), said intermediate regions forming a smaller angle with the axis of the threadings than the neighbouring regions (20, 21, 24, 25) of said flanks.

28. A threaded tubular connection for implementing the method according to claim 17 or claim 18, comprising a male tubular element (1) including a tapered male threading (3), and a female tubular element (2) including a tapered female threading (4) which cooperates with the male threading (3) by makeup to produce a rigid mutual connection of said tubular elements with radial interference between radial load transfer zones (15) of said threadings, in which said radial load transfer zones are ramps (31, 36) constituting the stabbing flanks of the male and female threadings (3b, 4b) over the major portion of the radial height thereof, and the profile of the male threading comprises a first concave rounded portion (32) defining the thread root and tangential to said ramp.

29. A threaded tubular connection for implementing the method according to one of claims 19 to 21, comprising a male tubular element (1) including a tapered male threading (3), and a female tubular element (2) including a tapered female threading (4) which coop-

erates with the male threading (3) by makeup to produce a rigid mutual connection of said tubular elements with radial interference between radial load transfer zones (15) of said threadings, in which said radial load transfer zones are ramps (31, 36) constituting the stabbing flanks of the male and female threadings (3b, 4b) over the major portion of the radial height thereof and a groove defining the female thread root extends axially from a first wall constituted by the load flank (5) to a second wall (37) which is connected to the ramp (36) of the female threading.